

DE

(19) 日本国特許庁 (J P)

(12) 公 開 特 許 公 報 (A)

(11) 特許出願公開番号

特開平11-56452

(43) 公開日 平成11年(1999) 3 月 2 日

(51) Int.Cl.<sup>6</sup>

識別記号

F I

A 4 5 D 29/18

A 4 5 D 29/18

B 4 1 J 2/01

B 4 1 J 3/04

1 0 1 Z

審査請求 未請求 請求項の数 2 O L (全 5 頁)

(21) 出願番号 特願平9-221446

(22) 出願日 平成9年(1997) 8 月18日

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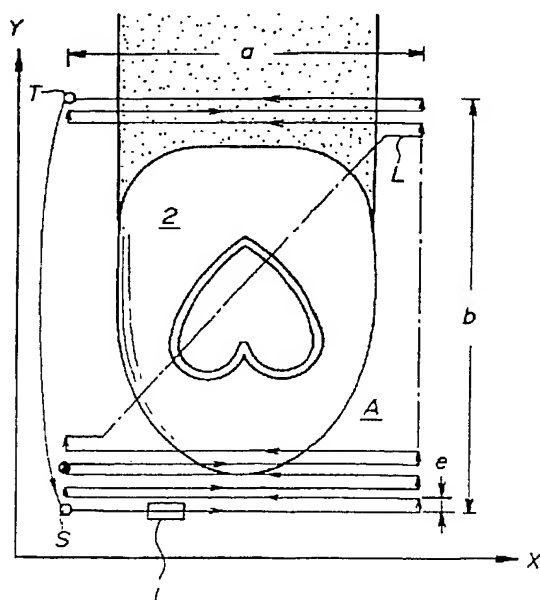
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(54) 【発明の名称】 インクジェットプリンタによるネイルアート方法及び装置

(57) 【要約】

【課題】 自分自身で所望のネイルアート画を、自分の指の爪面に容易に描くことができるようにする。

【解決手段】 コンピュータに記憶させたプログラムに基づいて爪面(2)と、それに対向する複数のインクジェットノズルを備えたプリンタヘッドのいずれか一方又は双方を移動させると共に、その移動中にインクジェットノズルからカラーインクを爪面に噴射させて爪面にネイルアート画をプリントする。



1 : プリンタヘッド A : 移動平面 L : 移動経路  
2 : 爪面 S : 始端 T : 終端

ンピュータ4からの制御信号に基づいてプリンタヘッド1を図1に示す移動経路Lに沿って移動させる。又、コンピュータ4は、プリンタヘッドが選択されたネイルアート画を形成する画素に対応する移動経路上の点に達したとき、その画素の色合いのインクジェットノズル5からインクを噴射させる制御信号をプリンタヘッド1に出力する。コンピュータ4からの制御信号に基づいてプリンタヘッド1は指示された色のインクジェットノズル5からインクを爪面2に噴射する。プリンタヘッド1が図1に示す移動経路Lに沿って始端Sから終端Tまで移動したとき、爪面2に選択したネイルアート画7のプリントは完了する。

【0008】このように、自分の指の爪面を、コンピュータによって移動するプリンタヘッドの移動平面に対応する所定の位置を保持し、コンピュータに記憶させたネイルアート画の一つを選択してプリントする指令をコンピュータに入力するだけで、自分自身の爪面に所望のネイルアートを施すことができる。図示していないが、指をコンピュータによって移動する指支持台11のせて爪面を図1のY方向に移動させ、プリンタヘッドをコンピュータによってX方向に移動させてネイルアートを施してもよい。又、プリンタヘッドを固定して、指支持台のみをコンピュータによりXY方向に移動させてネイルアートを施してもよい。

【0009】爪面に水性インクを噴射してネイルアート画をプリントする場合は、あらかじめ、爪面にバインダーをスプレー又はブラシによりアンダーコートしておくことが望ましい。又、水性インクによりプリントしたネイルアート画の上にラッカー等のトップコートを施してネイルアート画を保護してもよい。

【0010】

【実施例】本発明のネイルアート装置の一実施例を図面に基づいて説明する。図3及び図4に示すように、フレーム10に指支持台11を固定する。指支持台は爪先21の位置を規定する爪先当て部12と、指の背を当てる指背当て部13を有する。指20を指支持台11にのせ、爪先21を爪先当て部12に当て、かつ指20の背を指背当て部13に当てると、爪面2は所定位置に保持される。フレーム10にプリンタヘッド移動手段3の固定枠31を固定する。固定枠31には縦ねじ軸32が軸受けされ、その縦ねじ軸32をパルスモータ33に直結する。縦ねじ軸32には縦スライダ34をねじばめする。縦スライダ34に横枠35を固定し、その横枠に横ねじ軸36を軸受けする。横ねじ軸36はパルスモータ37に直結する。横ねじ軸36に横スライダ38をねじばめし、その横スライダ38にプリンタヘッド1を固定する。

【0011】プリンタヘッド1は複数のインクジェットノズル5を備え、コンピュータの制御に基づいて、そのインクジェットノズル5からカラーインクを噴射する。

インクジェットノズル5は指支持台11によって保持した爪面2に対向する。パルスモータ33、38はコンピュータの制御に基づいて回転する。パルスモータ33が回転すると、プリンタヘッド1は縦方向に移動し、パルスモータ38が回転すると、プリンタヘッド1は横方向に移動する。パルスモータ33、38の1パルス回転角によるプリンタヘッドの移動距離は、プリント画素の縦横のピッチの倍数である。コンピュータはパルスモータ33、38の回転を、プリンタヘッド1が図1に示す経路L上に移動するように制御し、コンピュータに記憶させたネイルアート画の1つをプリントするプログラムは、プリンタヘッド1が移動経路上のそのネイルアート画をプリントするために必要な位置にきたときに、そのネイルアート画の形成に必要な色のインクをインクジェットノズルが噴射するようにプリンタヘッド1を制御する。このコンピュータの制御により、プリンタヘッド1が図1の始端Sから終端Tまで移動経路Lに沿って移動するとき、プリンタヘッド1がネイルアート画の画素がプリントされるべきすべての位置において、その画素を形成する色のインクがインクジェットノズルから噴射されるから、プリンタヘッド1が始端Sから終端Tまで移動し、再び始端Sに戻ったとき、爪面2に対するネイルアート画のプリントは完了している。

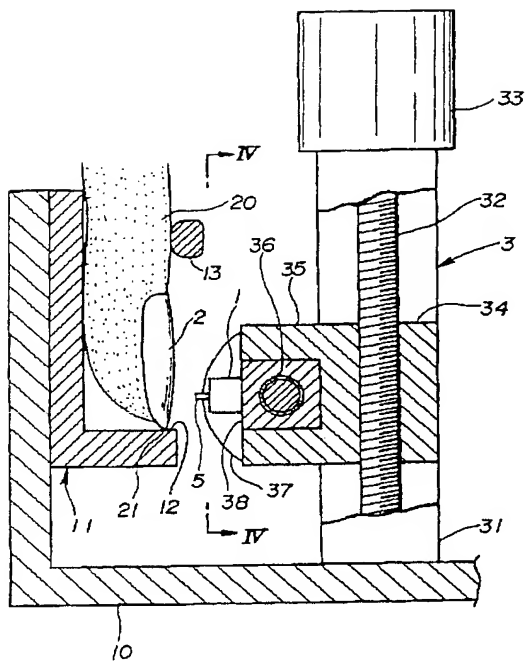
【0012】実施例を示していないが、本発明の装置は、プリンタヘッドと指支持台の双方を移動させる方式とすることも可能である。この場合、コンピュータ制御の指支持台移動手段及びプリンタヘッド移動手段を設けて指支持台をY方向すなわち指の縦方向に1回だけ往復移動し、プリンタヘッドをX方向すなわち指の横幅方向にくり返し往復移動させる。さらに、プリンタヘッドを固定し、コンピュータ制御指支持台移動手段により指支持台のみをX及びY方向に移動することも可能である。

【0013】

【発明の効果】上記のとおり、本発明のネイルアート方法は、従来のマニキュアを使用するものとは異なり、コンピュータにより制御するプリンタヘッドを使用してコンピュータに記憶させたネイルアート画をプリンタヘッドのインクジェットノズルからカラーインクを爪面に噴射させてプリントする方式であるから、あらかじめ多種多様なネイルアート画をコンピュータに記憶させておけば、何人も自分の指の爪面に所望のネイルアート画を自分自身で至極容易に描くことができるという優れた効果を奏する。

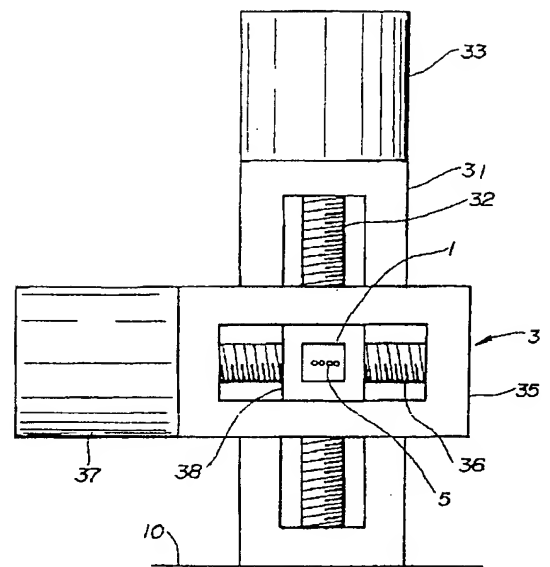
【0014】又、本発明のネイルアート装置はフレームに設けた指支持台と、指支持台に保持した指の爪面にネイルアート画をプリントするプリンタヘッドと、その指支持台とプリンタヘッドの一方又は双方を相対的に2次元方向に移動させるようにフレームに設けた移動手段と、移動手段による移動及びプリンタヘッドのカラーインクジェットノズルのカラーインク噴射を制御するコン

【図3】



- |           |            |
|-----------|------------|
| 10: フレーム  | 32: 縦ねじ軸   |
| 11: 指示持台  | 33: バルスモータ |
| 12: 爪先当て部 | 34: 縦スライダー |
| 13: 指背当て部 | 35: 横棒     |
| 20: 指     | 36: 横ねじ軸   |
| 21: 爪先    | 37: バルスモータ |
| 31: 固定枠   | 38: 横スライダー |

【図4】



# PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-056452  
(43)Date of publication of application : 02.03.1999

(51)Int.Cl.

A45D 29/18  
B41J 2/01

(21)Application number : 09-221446  
(22)Date of filing : 18.08.1997

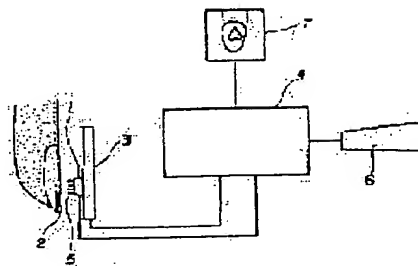
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## (54) METHOD AND DEVICE FOR NAIL ART BY INJECT PRINTER

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a method and a device for nail art for personally drawing a desired picture or the like on a finger nail by using a printer head comprised with a color ink jet nozzle controlled by a computer to print the desired picture or the like stored in the computer on a surface of the nail.

SOLUTION: When a surface 2 of the nail is retained at a predetermined position, a plurality of ink jet nozzles 5 of a printer head 1 is faced against the surface 2 of the nail. After selecting a nail art picture 7 is carried out. The printer head 1 is moved by a printer head moving means 3 according to control signals from the computer 4. The computer 4 outputs the control signals for spraying ink from the ink jet nozzles 5 to the printer head 1. According to the control signals from the computer 4, the printer head 1 sprays ink from the ink jet nozzles 5 of indicated colors to the surface 2 of the nail.



## LEGAL STATUS

[Date of request for examination]  
[Date of sending the examiner's decision of rejection]  
[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]  
[Date of final disposal for application]  
[Patent number]  
[Date of registration]  
[Number of appeal against examiner's decision of rejection]  
[Date of requesting appeal against examiner's decision of rejection]  
[Date of extinction of right]

25.07.2003

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CLAIMS

[Claim(s)]

[Claim 1] A nail art method by ink jet printer characterized by making it inject based on a pull gram of nail art drawing which moved a printer arm head equipped with one or more ink jet nozzles which counter \*\*\*\* (2) based on a program stored in a computer, and stored color ink in a computer from said ink jet nozzle, and printing nail art drawing on \*\*\*\*.

[Claim 2] Nail art equipment by ink jet printer characterized by providing the following A frame (10) Finger susceptor prepared in order to hold \*\*\*\* (2) on said frame (11) A printer arm head equipped with one or more ink jet nozzles (5) (1) The computer (4) which made the program which make inject color ink from said ink jet nozzle, and prints nail-art drawing (7) while controlling a migration means (3) to which one side or both sides of said finger susceptor and said printer arm head is moved, and said migration means and moving one side or both sides of said finger susceptor and said printer arm head so that 2 relative-dimensional movement may be carried out, after said ink jet nozzle has countered said \*\*\*\* memorize

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] This invention relates to the nail art carried out using a color ink jet nozzle.

[0002]

[Description of the Prior Art] The conventional nail art was that to which an expert draws a picture etc. on direct \*\*\*\* using a manicure. It was not easy for the amateur who is not the skilled expert to draw a desired picture etc. on \*\*\*\* using a manicure. Moreover, in the case of dextrism, many things for which nail art is carried out at the pawl of a left finger in the case of a sinistral were also very difficult for the pawl of a right finger by themselves.

[0003]

[Problem(s) to be Solved by the Invention] However, in order that the nail art by the expert might require great costs and time amount, the nail art to which an amateur can also draw a desired picture etc. on \*\*\*\* in person was demanded. It is in offering the nail art method that the place which it is and is made into that purpose can draw a desired picture etc. on its fingernail side by itself and its equipment for this invention meeting this request.

[0004]

[Means for Solving the Problem] In order to attain said purpose, a means which this invention adopted is in a nail art method which prints a picture of a request stored in a computer etc. on \*\*\*\* using a printer arm head which consists of a color ink jet nozzle controlled by computer. A printer arm head of a color ink jet printer equipped with four ink jet nozzles, such as the three primary colors and black, can be used for a printer arm head as it is. A printer arm head makes color ink inject from an ink jet nozzle by control of a computer. It is desirable to enable it to choose a desired thing by key stroke from various nail art drawings printed in space out of various nail art drawings which various nail art drawings were beforehand stored in a computer, and were displayed on a monitor's screen.

[0005] Equipment which enforces this invention method consists of a computer, a printer arm head, a frame, finger susceptor prepared in a frame, and a migration means to move one side or both sides of finger susceptor or a printer arm head on a frame. For example, when moving only a printer arm head, finger susceptor holds \*\*\*\* which carries out nail art in a predetermined location. A printer head migration means moves a printer arm head to a termination location along with predetermined moving trucking from a start edge location by control of a computer based on a program which a computer has memorized. A computer makes color ink inject from an ink jet nozzle in a location which prints nail art drawing on moving trucking of a printer arm head based on a program which prints memorized nail art drawing.

[0006]

[Embodiment of the Invention] The nail art method of one example of this invention is explained based on a drawing. Drawing 1 shows the relative moving trucking of the printer arm head 1 to \*\*\*\* 2. Only a moves to the right in the direction of X from the start edge S, only e moves upwards, subsequently to the direction of X only a returns, and, subsequently to the direction of Y, subsequently to the direction of Y, only e moves the printer arm head 1 upwards further. Repeating the round trip of this direction of X, and advance of the direction of Y, the printer arm head 1 moves the predetermined moving trucking L top to the termination T which is in the location of distance b in the direction of Y from the start edge S. Reaching Termination T, the printer arm head 1 returns to the start edge S in a straight line. 1 time of the migration length e of the direction of Y is equal to the direction pitch of Y of the pixel which a computer makes inject a color ink jet nozzle, and forms in \*\*\*\*. Moving trucking L passes along all the points corresponding to all the pixels within the rectangle migration plane A of the direction width-of-face aY direction width of face b of X one by one. The direction width of face a of X is larger than the breadth of \*\*\*\* 2 which gives nail art, and its direction width of face b of Y is larger than the dip of \*\*\*\* 2. If \*\*\*\* 2 is held in a predetermined location, \*\*\*\* 2 will enter in the migration plane A, and the lengthwise direction center line of \*\*\*\* 2 will agree in the lengthwise direction center line of the migration plane A.

[0007] If \*\*\*\* 2 is held in a predetermined location when moving only the printer arm head 1 as shown in drawing 2, two or more ink jet nozzles 5 of the printer arm head 1 will counter \*\*\*\* 2. One nail art drawing 7 is chosen from the various nail art drawings which operated the keyboard 6 and were beforehand stored in the computer 4, and the program which prints the nail art drawing is performed. If this program is executed, the printer head migration means 3 will be moved along with the moving trucking L which shows the printer arm head 1 to drawing 1 based on the control signal from a computer 4. Moreover, a computer 4 outputs the control signal which makes ink inject from the ink jet nozzle 5 of the tint of the pixel to the printer arm head 1, when the point on the moving trucking corresponding to the pixel which forms the nail art drawing as which the printer arm head was chosen is reached. Based on the control signal from a computer 4, the printer arm head 1 injects ink from the ink jet nozzle 5 of the directed color to \*\*\*\* 2. When the printer arm head 1 moves from the start edge S to Termination T along with the moving trucking L shown in drawing 1, the print of the nail art drawing 7 chosen as \*\*\*\* 2 is completed.

[0008] Thus, the position corresponding to the migration plane of the printer arm head which moves by computer in its fingernail side can be held, and desired nail art can be given to its own \*\*\*\* only by inputting into a computer the command which chooses and prints one of the nail art drawings stored in the computer. Although not illustrated, it puts on the finger susceptor which moves a finger by computer, \*\*\*\* may be moved in the direction of Y of drawing 1, a printer arm head may be moved in the direction of X by computer, and nail art may be given. Moreover, a printer arm head may be fixed, only finger susceptor may be moved in the XY direction by computer, and nail art may be given.

[0009] When injecting water color ink to \*\*\*\* and printing nail art drawing on it, it is desirable to carry out the under coat of the binder to \*\*\*\* with a spray or a brush beforehand. Moreover, topcoats, such as lacquer, may be given on the nail art drawing printed by water color ink, and nail art drawing may be protected.

[0010]

[Example] One example of the nail art equipment of this invention is explained based on a drawing. As shown in drawing 3 and drawing 4, the finger susceptor 11 is fixed to a frame 10. Finger susceptor has the tiptoe reliance section 12 which specifies the location of a tiptoe 21, and the \*\*\*\* reliance section 13 which applies the back of a finger. If a finger 20 is put on the finger susceptor 11, and a tiptoe 21 is applied to the tiptoe reliance section 12 and the back of a finger 20 is applied to the \*\*\*\* reliance section 13, \*\*\*\* 2 will be held in a predetermined location. The fixed

frame 31 of the printer head migration means 3 is fixed to a frame 10. The bearing of the vertical screw-thread shaft 32 is carried out to a fixed frame 31, and the vertical screw-thread shaft 32 is directly linked with a pulse motor 33. It carries out the vertical slider 34 to the vertical screw-thread shaft 32. A transversal frame 35 is fixed to the vertical slider 34, and the bearing of the horizontal screw-thread shaft 36 is carried out to the transversal frame. The horizontal screw-thread shaft 36 is directly linked with a pulse motor 37. The horizontal slider 38 is mounted on the horizontal screw-thread shaft 36, and the printer arm head 1 is fixed to the horizontal slider 38.

[0011] The printer arm head 1 is equipped with two or more ink jet nozzles 5, and injects color ink from the ink jet nozzle 5 based on control of a computer. The ink jet nozzle 5 counters the finger susceptor 11. Pulse motors 33 and 38 rotate based on control of a computer. If a pulse motor 33 rotates, the printer arm head 1 will move to a lengthwise direction, and if a pulse motor 38 rotates, the printer arm head 1 will move to a longitudinal direction. The migration length of the printer arm head by 1 pulse angle of rotation of pulse motors 33 and 38 is the multiple of the pitch of a print pixel in every direction. When it comes to a location required in order that the printer arm head 1 may print the nail-art drawing on moving trucking, the program which prints one of the nail-art drawings which controlled the computer so that the printer arm head 1 moved rotation of pulse motors 33 and 38 onto the path L shown in drawing 1, and were stored in the computer controls the printer arm head 1 so that an ink jet nozzle injects the ink of a color required for formation of the nail-art drawing. When the printer arm head 1 moves along with moving trucking L by control of this computer from the start edge S of drawing 1 to Termination T, in all the locations where the pixel of nail art drawing should be printed for the printer arm head 1. Since the ink of the color which forms the pixel is injected from an ink jet nozzle, when a print head 1 moves from the start edge S to Termination T and returns to the start edge S again, the print of the nail art drawing to the finger susceptor 11 is completed.

[0012] Although the example is not shown, the equipment of this invention can also be considered as the method to which the both sides of a printer arm head and finger susceptor are moved. In this case, the finger susceptor migration means of computer control and a printer head migration means are established, both-way migration of the finger susceptor is carried out only once in the direction of Y, i.e., the lengthwise direction of a finger, a printer arm head is repeated in the direction of X of breadth, i.e., the direction of a finger, and both-way migration is carried out. Furthermore, it is also possible to fix a printer arm head and to move only finger susceptor in X and the direction of Y with a computer control finger susceptor migration means.

[0013]

[Effect of the Invention] As above-mentioned, the nail art method of this invention Since it is the method which the finger susceptor 11 is made to inject color ink and prints the nail art drawing which was stored in the computer using the printer arm head controlled by the computer unlike what uses the conventional manicure from the ink jet nozzle of a printer arm head. If various nail art drawings are beforehand stored in a computer, the outstanding effect that many persons can draw desired nail art drawing on their fingernail side very easily by themselves will be done so.

[0014] Moreover, the finger susceptor which formed the nail art equipment of this invention in the frame and the printer arm head which prints nail art drawing on the fingernail side held to finger susceptor, The migration means formed in the frame so that one side or the both sides of the finger susceptor and printer arm head might be relatively moved in the two-dimensional direction, It consists of a computer which controls the migration by the migration means, and color ink injection of the color ink jet nozzle of a printer arm head. If it directs to a computer that a nail art operation person puts his finger on finger susceptor, one nail art drawing is chosen from the nail art drawings which the computer has memorized by the key stroke, and it is printed. Since a computer prints the nail art drawing on the finger susceptor, the outstanding effect that many persons can draw desired nail art drawing very easily [ one's finger ] by themselves is done so.

[Translation done.]